



Day 1: Quartiles



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Objective

In this challenge, we practice calculating *quartiles*. Check out the [Tutorial](#) tab for learning materials and an instructional video!

Task

Given an array, X , of n integers, calculate the respective first quartile (Q_1), second quartile (Q_2), and third quartile (Q_3). It is guaranteed that Q_1 , Q_2 , and Q_3 are integers.

Input Format

The first line contains an integer, n , denoting the number of elements in the array.

The second line contains n space-separated integers describing the array's elements.

Constraints

- $5 \leq n \leq 50$
- $0 < x_i \leq 100$, where x_i is the i^{th} element of the array.

Output Format

Print 3 lines of output in the following order:

- The first line should be the value of Q_1 .
- The second line should be the value of Q_2 .
- The third line should be the value of Q_3 .

Sample Input

```
9
3 7 8 5 12 14 21 13 18
```

Sample Output

```
6
12
16
```

Explanation

$X = \{3, 7, 8, 5, 12, 14, 21, 13, 18\}$. When we sort the elements in non-decreasing order, we get $X = \{3, 5, 7, 8, 12, 13, 14, 18, 21\}$. It's easy to see that $median(X) = 12$.

As there are an odd number of data points, we do not include the median (the central value in the ordered list) in either half:

Lower half (L): 3, 5, 7, 8

Upper half (U): 13, 14, 18, 21

Now, we find the quartiles:

- Q_1 is the $median(L)$. So, $Q_1 = \frac{5+7}{2} = 6$.
- Q_2 is the $median(X)$. So, $Q_2 = 12$.

- Q_3 is the *median*(U). So, $Q_3 = \frac{14+18}{2} = 16$.

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Submissions: [13151](#)

Max Score: 30

Difficulty: Easy

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Python 3



```
1 n = int(input())
2 X = list(map(int, input().split()))
3 X.sort()
4 def median(arr):
5     l = len(arr)-1
6     m = l//2
7     return(round((arr[m] if (l+1)%2!=0 else (arr[m]+arr[m+1])/2)))
8 q2 = median(X)
9 m = (n-1)//2
10 if(n%2==0):
11     q1 = median(X[:m+1])
12     q3 = median(X[m+1:])
13 else:
14     q1 = median(X[:m])
15     q3 = median(X[m+1:])
16 print(q1,q2,q3, sep='\n')
```

Line: 1 Col: 1

 [Upload Code as File](#) ☐ Test against custom input

Run Code

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